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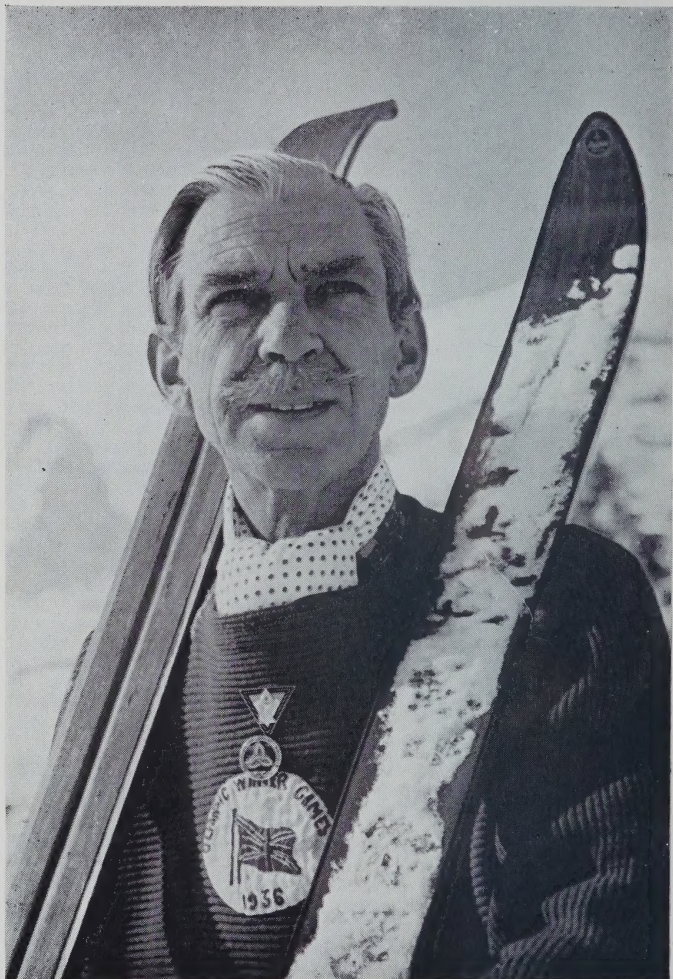
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W. R. ("Bill") Bracken

A HANDBOOK ON SKI-ING

by

W. R. BRACKEN

With a Foreword by
ARNOLD LUNN

CHARLES T. BRANFORD CO.
NEWTON 59, MASSACHUSETTS

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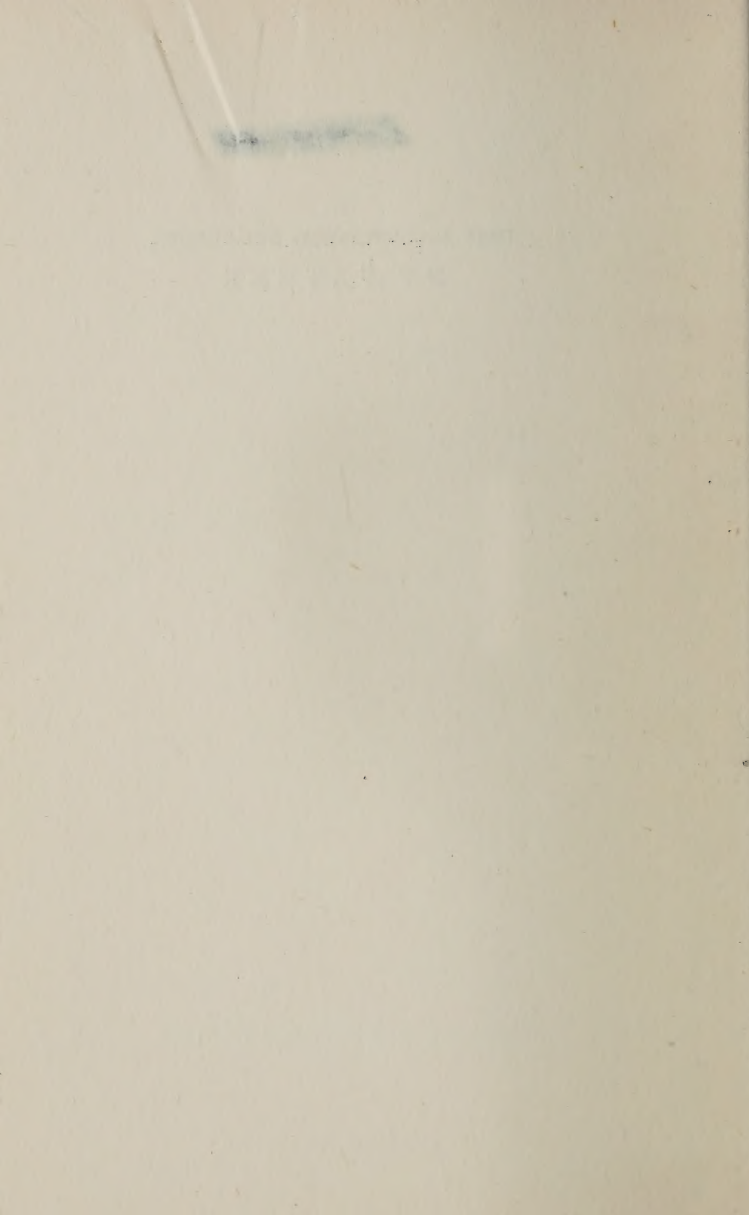
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TO
THAT ACCOMPLISHED SKI-RUNNER
MY FATHER

Phys. Educ. 14 Oct 60 Melling 10 Jan. 61. Clark.



Acknowledgements

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The small line sketches which appear in Appendix I were drawn for the author by Mr. T. Douglas Ross, and the four diagrams in colour by Miss F. Gorniot from original drawings by W. R. Bracken.

The Section on the " Club " Safety device which appears on pages 24, 25 and 26, and also Appendix II have been reproduced from literature supplied by the Ski Club of Great Britain, and with the courtesy of the latter in the interests of safety.

Plates 19, 20, 21 and 22 have been made from originals supplied by the Ski Club of Great Britain and reproduced by their kind permission.

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- (a) *The Red Ski and Red Dots show distribution of weight*
- (b) *The Red Arrows denote the Arc of Turn.*

Foreword

In the early days of 1925 I was sitting in Room 4 at Mürren when the door burst open and an agitated member of the Kandahar invaded my room and exclaimed, "Come at once to the Practice Slopes. There's a maniac in a red shirt streaking down from the fence."

Now there was a large notice on the Practice Slopes which I had drafted with care, and which was designed to reserve these Slopes for beginners, and to intimidate speed hogs. I arrived just in time to witness Bill Bracken's third attempt to clear the slopes for beginners. In those days straight running had not reached its present standard, and clusters of awestruck novices were watching him with amazement.

The incident which I have recorded is a little difficult to reconcile with Mr. Bracken's statement in the British Ski Year Book (Vol. V, page 164).

"In 1925 I came to Mürren from Austria to try my hand at racing with indifferent success, but what impressed itself upon my mind was the fact that

(a) I had never gone fast before, and

(b) when I did go fast I had no control."

As to (b), this would seem to have been the view of the beginners on the Practice Slopes who had been scattered by his approach, but (a) seems to me incredible.

In his first season at Mürren he would have won the 'Roberts of Kandahar' but for a blunder on the part of an official, and though Walter Amstutz, according to Bracken's account, ran away from him down the South Slopes, the racing experience which he gained at Mürren very soon put him into Walter Amstutz's class. These two fine runners raced against each other on several occasions, and sometimes Bracken won, and sometimes Amstutz.

Mr. Bracken's name will always be linked with Mackintosh, Leonard Dobbs and Peter Lunn, the ' Big Four ' who put British downhill racing on the international map. Mr. Bracken's greatest triumph was, I think, his achievement in the ' Arlberg-Kandahar ' of 1931 when he won the Slalom, beating Otto Furrer among others, and finished third on the Combined Result. This was not his only outstanding international success. He was second in the first straight race ever held at a F.I.S. meeting, the official straight race included as an experiment in the meeting at Zakopane, Poland, in 1929. He won the ' Lauberhorn Cup ' at Wengen, one of the big four combined straight and slalom racing international meetings. He won the British ski-running championship in three consecutive years, at Mürren, where he beat Mackintosh, at Wengen and at Maloja. His name will be found engraved on the list of the classic cups, the ' Roberts of Kandahar ', the ' Prince Chichibu ' and the ' Alpine Ski ' among others.

He was in the British International Ski Team in 1929 and 1931, and captained it in 1932, after which he withdrew from serious international racing, but as late as 1949 he tied for the ' British Slalom Championship ', a fantastic achievement for a man of his age. In 1950 Mr. Bracken was awarded the Pery medal, the greatest distinction in the power of the Ski Club of Great Britain to award.

Mr. Bracken is not only a first class runner but a first class teacher. His most notable success is the victory of Evie Pinching in the ' World Championship ' at Innsbruck of 1936.

This book, will, I am sure, prove a notable contribution to the literature of ski-ing, and will be welcomed by a very wide circle of friends, and former and present pupils.

ARNOLD LUNN.



Plate 1. Otto Furrer. Holder of the Diamond A.K. Badge and late Director of the Zermatt Ski School. Tragically killed on the Matterhorn, July 1951.



Plate 2. Watching the next pair of flags

Plate 3. Ski-ing on old tracks



Chapter One

A GREAT number of people in the British Isles have the erroneous idea that ski-ing is a dangerous sport and is reserved either for those who have learnt very early in life or for those who are quite mad! This is partly due to the cinema which usually shows jumping films. Jumping is, of course, the most spectacular form of ski-ing, though, as far as competitions are concerned, downhill racing is far more difficult. Jumping is a form of ski-ing which is only practised by a few British skiers and is more popular as a sport in Scandinavia than in Central Europe mainly due to the terrain. The great mountains of the Central European Alps give better opportunity for Downhill ski-ing.

The British were largely responsible for the start of ski-ing as a sport and were the first nation to organize Downhill Racing. Ski-ing is now the national sport of Central Europe and every weekend thousands of townsfolk flock to the mountain resort nearest their home. Any of the main stations in Switzerland at a week-end resemble a London terminus on a Bank Holiday except for the fact that everyone is dressed in ski-ing clothes with a pair of skis on their shoulder. From some of the big cities there will be as many as six or eight special trains leaving for the mountains on a Saturday.

England is fast following Europe's example, and apart from the Ski Club of Great Britain, which

has a membership of over 12,000 increasing by over 1,000 per year, there are numerous other Clubs such as the Army Ski Club, the Navy Ski Club, the R.A.F. Ski Club, the Scottish Ski Club, the British University Ski Club etc. etc. Apart from these clubs, several regiments have their own ski clubs and most of the ski-ing centres in Europe have their own local British ski club.

Ski-ing is no longer a sport for the rich as some people are apt to think. A Winter Sports holiday in Switzerland or Austria costs no more than a holiday in England. The Army is partly responsible for the increasing popularity of ski-ing. The main sport of the Army of occupation in Europe is ski-ing, and the C.M.F., B.A.O.R., and B.T.A. all have their own Championships. Rest centres are organised by the Army at Winter Sports resorts where instruction is provided free of charge.

All resorts these days have some form of transport up the mountains, either a funicular, teleferique, chair-lift or ski-lift. These will take you up to a height of from two to six thousand feet above the valley giving access to many varying runs. They enable one to get the maximum amount of ski-ing in a short holiday and are to a large extent responsible for the high standard of ski-ing to-day. In the old days one had to climb two or three hours before going for a run but for those wanting the maximum amount of ski-ing, these forms of transport are a godsend.

EQUIPMENT

The best advice I can give to those ski-ing for the

first time is not to buy too much, but let what you do buy be of the best within your means.

The most important item of a skier's equipment is a good pair of boots which fit well. An ill-fitting pair of boots can be the greatest handicap to a beginner or, in fact to a ski runner of any standard. If the boot is too tight, it will invariably cause cold feet; on the other hand, a loosely fitting pair of boots will make it very difficult to control the skis and will increase the difficulty of executing even the most elementary of turns. Boots should be worn over two pairs of woollen socks, one thick and one thin.

Many beginners suffer from the mistaken kindness of friends who lend them old boots, and skis with antiquated bindings. These misguided people arrive on the slopes for their first day's instruction and are sent back by their instructor to get adequate boots or skis and probably spend the whole morning having their bindings altered to make ski-ing at all possible. If you cannot afford to buy new boots or skis, at most Winter Sports centres these can usually be hired and you will be provided with skis suitable to your height and weight at a very moderate charge.

The main items of clothing necessary are a good pair of ski-trousers, preferably of the "Vorlager" or "Peg-top" type, which are worn inside the boot and are held taut by an elastic band under the foot, a wind jacket with a hood of waterproof and wind-proof material, and several sweaters. It should be noted here that several layers of thin clothing are

warmer than one layer of thick. The wind-jacket should fit snugly at the waist with a 'skirt' that can be tucked inside the trousers; this will prevent snow getting into the trousers after a fall.

With regard to gloves, it is essential for the beginner to keep the hands dry and warm. This is best achieved by wearing a pair of woollen gloves with waterproof mittens over the top.

There are various types of head-gear on the market, but the simplest is a headband made of wool which covers the ears, or ear muffs. A peaked cap is very useful when it is snowing and is particularly comfortable to wear under the hood of a wind-jacket. Eye-shield or goggles are necessary as the reflected glare of the sun off the snow can be very trying for the eyes. They are also very helpful in a snow-storm.

A Rucksack is not necessary unless going on a long trip, but what is commonly known as a "Bum-bag", worn round the waist on a belt, is very useful for carrying bits and pieces, dry gloves, packed lunch etc.

One word of advice: if the weather looks at all doubtful, always carry a spare sweater.

SKIS

Presuming the beginner purchases his own skis, a rough guide for length, width, etc. is invaluable to him. The present-day ski varies very little in width, and the length and weight of the ski depends entirely on the weight and height of the person using

them. Generally speaking a ski should reach to the centre of the palm of the hand when stretched to the full extent above the head. Of course, a very strong and heavy person can use a longer and heavier ski with a stiffer arch, than a person of the same height who is not so heavy. Longer skis are definitely more difficult for turning but much easier for straight running, whereas shorter skis are easier on which to turn, lighter to carry and essential when making glacier tours in the spring. In open country, with long runs of from 10 to 15 kilometres, a long pair of skis is very advantageous, but for those who are learning and also for those who are going on little short runs, a shorter pair are much easier to manipulate. So my advice to the beginner is to buy a pair of skis a little shorter than the required standard. When you improve and can ski really fast, if you have to buy a new pair of skis, get them a little longer than the required standard.

A Jumper's skis are a foot or 18 inches in length above the palm of his hand, they are half as wide again as the ordinary ski, and have three grooves. The reason for the three grooves is because when jumping sixty to eighty metres, they land at a speed of anything up to seventy miles per hour and have to be steady on the outrun otherwise they would injure themselves.

In the famous race at St. Moritz over a prepared course which is known all over the world as "The Flying Kilometre", speeds of over eighty miles per hour have been attained on skis. These special skis are twice as big as jumping skis and have four

grooves, and the racer streamlines himself to look like a small racing car. With a strap fixed to the ski in front of the binding, he is able, by holding this, to keep his weight forward at this terrific speed.

The Arch of the ski is most important. A flexible ski should have a wider arch than a stiff one, otherwise it is apt to go flat in a very short time and lose its elasticity, which will result in the ski slipping sideways and not gripping the snow either when running or when doing a turn. Beginners should always buy a flexible ski unless they happen to be very heavy, in which case a stiffer pair would prove more satisfactory as then the ski would be less likely to lose its arch. Should the ski show any inclination to go flat, a block of wood three inches square should be placed between the skis, six inches in front of the toe-iron, and each end of the ski tied together where the running surfaces touch. This should be done every night until the ski is normal again. This method should always be adopted when storing the skis in the summer.

Skis are made of various different kinds of woods, and to-day there are steel and plastic skis on the market as well. Generally speaking, laminated skis are more satisfactory than solid wood skis as they are less apt to warp. A solid wood ski is cut out of the solid tree, whereas a laminated ski is made up of many pieces of wood glued together, which makes for added strength, as in the modern tennis-racket or fishing-rod. These laminated skis can either be made entirely of hickory wood or of ash and hickory mixed, the latter, being lighter, are better for the

beginner or for those who are not so strong. Ash skis are cheaper to buy but wear out more quickly and are much more liable to break.

Steel edges are essential to all skis. They make little difference in soft snow, but it is impossible to ski on beaten tracked snow or the "piste", as it is called to-day, without them. Edges should be fitted from the very bottom of the ski to the very end of the toe, otherwise the wood at the extremities will get worn in a very short time.

If the skis you purchase are not supplied with the new composition sole, several coats of lacquer should be applied. This acts not only as a protection to the wood, but also makes a very good running surface. There are several types of special lacquers for skis on the market, and make certain you use one of these lacquers, as ordinary paint or cellulose are of no use as they will not slide on the snow. When applying the lacquer, take great care not to cover the steel edges as this will make the ski judder on the turns. This advice is more for the expert than for the beginner. I found this out some years ago while testing a new type of ski. I could not understand why they would not turn smoothly but left a corrugated track on the turn. I thought at first it was a failing in the construction, but when I removed the lacquer from the edges, the ski behaved perfectly.

Lacquer will run on most types of snow but it is advisable to wax over it. Books have been written on different methods of waxing on the various types of snow, but, generally speaking, a black wax of

the Sohm or Bilgeri type, with white paraffin ironed in over it, is best for new snow. Graphite is excellent in cold snow, and silver paraffin is most satisfactory in wet or spring snow.

BINDINGS

There are many and various types of binding on the market, but the Kandahar binding is the most used and is very effective. For racing, it is imperative to have bindings which hold the foot rigid on the ski. Beginners should be able to raise the heel slightly, thus minimising the risk of an accident.

To avoid accidents the device known as the "Club" Safety Device* will be found to be of great help.

This device operates by pulling the binding off the heel during a fall and releasing the foot. It is simplicity itself, but unless correctly adjusted with the same care and attention which is used for the binding itself, it will not work as intended and will either release constantly or not at all at the critical moment.

To obtain the best results, the following notes and instructions should be strictly adhered to:—

- (1) The device will work with any binding of the Kandahar type, or any other binding having a heel spring or cable relying on the Kandahar principle.
- (2) The photographs show the device utilising the toe iron with a weldt clip instead of the usual toe strap. The device works equally

[*See plates 19, 20, 21 and 22.]

well, or even better, with the more usual toe strap.

- (3) The photographs do not show the security strap. It is essential to wear some form of security strap (which prevents the ski being lost when the device operates), attached either by the toe iron or toe strap, and round the ankle. This security strap must be fairly substantial. As a guide to necessary strength, the white cotton type of boot laces are quite successful. There are other better straps on the market.

As shown in the photographs, the device consists of:—

- (a) A strong welded ring of preferably rustless steel, diameter about one inch.
- (b) A strip of soft metal, holding the ring, and screwed to the ski, approximately thirteen centimetres behind the heel. One screw has been found sufficient.
- (c) A strong strap with a good buckle, which must be easily adjustable. The webbing straps as shown in the photograph have proved quite satisfactory, but some consider that a good quality leather strap with a good buckle would be preferable.

The amount of tightness of the "Club" safety device can only be found by experiment, and depends primarily on the amount of heel rise the skier normally uses, and whether he uses a Kandahar under the first or under the second catch. As a

general practice, the strap should be adjusted so that the heel can be raised sufficiently high to put the two first fingers on top of each other, underneath the heel, before tension comes on the strap—that is, heel rise of approximately $1\frac{1}{2}$ ". The best method of testing is when fitting the skis in the ski shop, the skier should have both skis on and lean forward, hanging on his binding in the "vorlager" position. He should be able to put all his weight on to the binding, and lean forward a considerable way and feel a lot of tension before the device operates. It is essential when experimenting to have someone standing in front of the skier to catch him when the device comes into operation.

Experience shows that the device operates on a snatch action, and when it operates in a fall no tension is felt.

The device may operate when the skier first starts to walk on the skis, but a little practice overcomes this tendency. When walking long distances or climbing, the strap should be loosened.

Plate 22 shows the exact details of construction. It has been found by experiment that it is essential to have a strong ring for the strap to go through. The ordinary type of unwelded ring will open out in use.

It is also essential that skiers should see that their straps remain in good condition.

STICKS

Sticks should be light and should reach about six inches above the waist-line when not in the snow.

It is far better to have a metal stick rather than a wood one as they are not likely to break. The beginner so often breaks sticks by falling on them and these days the cost of replacement is considerable. There seem to be two schools of thought with regard to holding the thong of the ski-stick, one which believes that holding the thong is dangerous, and the other—the greater—which thinks the reverse. I say the greater as nearly all Central Europeans advocate the holding of the thong.

There is a good deal of justification in the British prejudices against holding the thong. It came about in this way. In the early days of ski-ing in the Alps, the sticks which were sold or hired to the ski-runners were very short as sticks, or bamboo, with a kind of boot-lace thong passed through a hole six inches from the top of the stick. To make use of this thong it had to be wrapped round the hand until it was tight, and then there were four or five inches of stick protruding above the hand, and as the natural instinct to try and save a forward fall is to push the stick into the snow in front of the ski, many accidents have occurred owing to the protruding top of the stick causing an injury. But now ski-sticks have advanced in design and have a padded leather grip with the thong emerging from the top of the stick.

SKINS

The best type of skins are those with short stiff hair: long-haired skins should be avoided as they are usually too soft to grip the snow well. The modern day plush skin is very reliable and cheaper

to buy. For Winter I prefer the tie-on skin, but for Spring ski-ing the Sohm skin is the best. This is a skin which adheres to the ski with wax. Sohm blue or yellow are usually used. These skins are better as they do not slip sideways on a traverse and the snow does not ball between the skin and ski. In cold weather and changing temperatures they are liable to come off and cause delay to the party and cold fingers to their owners, unless great care is taken in sticking them on before the climb; that is why I suggest that Spring is the best time to use them.

* * * * *

Chapter Two

GENERAL HINTS

HAVING dealt with the question of equipment, the newcomer arrives at his destination and is faced with the problem of how best to set about learning to ski. Friends, in many cases, will attempt to teach him the rudiments of the game, or he will try and copy other people whom he sees ski-ing around him.

A great deal of trouble—and often pain—will be eliminated if he goes to the local Ski-School where ski-teaching has been brought to a fine art, and all the various troubles of the beginner have been studied and the best methods of overcoming them have been learned. These schools have now been running for a number of years. In the old days ski teachers, although themselves good runners, were handicapped by lack of an organised system of instruction. The result was that they all employed methods of their own and the unfortunate pupil was frequently confused by being taught two or three ways of arriving at the same result.

The only method of checking in ski-running is turning except the involuntary fall. The most useful turn is the Stem Turn which in its advance stages becomes the Stem Christiania—by far the most useful turn in ski-running—and in its still further advanced stages, becomes the parallel swing used by all the experts. These turns we will discuss later.

Before learning to turn, it is necessary to learn to walk on ski, by no means easy to do correctly, but when mastered it will be a great help in the future both for touring and racing. The next stage is running downhill and traversing a slope.

Having learnt the rudiments of straight running and turning, the best way to improve is to take some test. Most Ski-Schools have their own Standard First, Second and Third Class Tests and at most centres there is a S.C.G.B. representative who will pass Members in the Ski Club Tests. You will be astonished how quickly you can improve your speed if you time yourself once or twice down a run. Do not think you can improve solely by practising over the same course—you may find that people you can beat easily on one particular run will leave you far behind on different country or on a tour in deep snow. Do not avoid deep snow, practice in it whenever you can—if you can turn well in deep snow you can always turn on hard, but the reverse is by no means the case. To turn in deep snow it is necessary to execute a turn perfectly to achieve any measure of success but you can get away with quite a lot on hard snow.

Perhaps the best way of improving is to get a few flags and make a short course, known as a Slalom, and practice your turns in and out of the flags. Start by placing flags in pairs at equal intervals, say each pair about two ski lengths apart and one below the other in a straight line. Having learnt to go through the flags easily, change them about, making the turns longer and shorter and varying the

gradient. In this way you will gain much more control than by merely practising on the slopes with no particular method. A word of advice here: ALWAYS WATCH THE PAIR OF FLAGS YOU INTEND TO PASS THROUGH AND NEVER LOOK AT YOUR FEET. (*See Plate 2*). This rule also applies to all ski-running—always look ahead.

It must be remembered that at all times the head should be still and over the centre of the ski. As the head is the heaviest part of the body, any movement is liable to upset balance. In ballroom dancing it is noticeable that good dancers do not move the head at all. This applies to ski-ing in the same way. From the nose to a point midway between the feet, there should be a straight line.

Another tip which is useful to remember on hard snow or piste is that the lower ski should be drawn back on the turn rather than the upper ski pushed forward. This will keep both knees well over the ski. If the upper ski is pushed ahead, you are bound to lose control of the upper ski. This does not apply in deep snow as the upper ski, which has no weight on it as on hard snow acts as a miniature snow-plough, easing the weight of snow piling up against the weighted ski. Running straight in deep snow, the same applies; the deeper the snow the further forward the leading ski should be. The skis should always be as close together as possible on all snows except old tracks where the feet are always forced apart. (*See Plate 3*).

At no time should any part of the body be taut: every muscle should be relaxed and breathing

should be normal. Holding one's breath is tiring
and a sure sign of fear.

* * * * *



Plate 4. Leaning forward

Plate 5. Changing weight to left ski





Plate 6. Stem turn to the right. Position 2

Plate 7. Stem turn to the right. Position 5





Plate 8. Finishing Stem Christiania to the left

Plate 9. Finishing Stem Christiania to the right





Plate 10. Jump-turn to the left

Chapter Three

STRAIGHT RUNNING

THE great thing to remember is that when you are ski-running all your natural instincts have to go by the board. The first thing a beginner has to learn is to run straight downhill on a very gentle slope, so as to acquire some kind of balance. To keep your balance on a slope, you must lean out from it as in climbing; your natural instinct is to lean in. This must be conquered and is no easy matter.

The next natural instinct is to lean back directly you start moving forward, but this will give you a nasty jar at the end of your spine, as you will probably land on the end of your skis with a heavy thud, so you must lean forward with the weight on the balls of the feet. By leaning forward, I do not mean merely from the waist, the knees must be well bent forward (*See Plate 4*). If you are standing still on the slope, the ideal position would be: nose, knee and toe of the boot at right angle to the snow, but as you are travelling forward, there is a certain amount of wind pressure which must be counteracted. The faster you go—assuming that the slope is perfectly smooth—the further forward you must lean. One foot should be slightly in advance of the other, hands forward and down, sticks held sideways to the body and slightly behind.

When approaching an up gradient, advance the

leading foot slightly, and weight the rear foot. There is a great tendency to fall forward unless there is a longer base to counteract the jerk of the skis suddenly slowing. As the speed decreases, thrust the weight forward on to the leading ski. Having reached the top of the rise, the weight should again be on both feet.

When running on to steeper ground, increase the forward lean of the body and have most of the weight on the forward ski.

When running over bumpy ground, keep the knees flexible, thrusting the skis into the hollows, by straightening the knees, and letting knees bend to absorb the shock of a rise; keep one ski well leading, but not so much as to prevent the knees from being over the toe.

When running from soft snow on to hard snow, the weight must be brought more forward. When running from hard snow on to soft, the weight must be brought further back and the forward ski thrust further forward to meet the obstruction.

When running straight on hard or tracked snow, it will be found impossible to keep the feet together. Both ski-points should be level, and both skis slightly on inside edges, but not too far apart with knees together. Being on the inside edges will tend to make the skis run together and will avert the fall from catching an outside edge, probably the worst of all falls and the most common when running fast.

Whilst on this subject, I am reminded of my old friend, Hannes Schneider, the most famous of Austrian Ski-Teachers, and originator of the famous

Arlberg School, who was heard to say at the first Alberg-Kandahar Meeting "The English, why do they never fall, they always catch an edge?"

When travelling very fast on smooth ground, it is preferable to stand nearly upright, weight well forward rather than crouch too low, as the crouch is tiring, otherwise when a rough piece of country is reached, you have nothing on which to fall back.

TRAVERSING

Here again, as I said before, the natural instinct is to lean in, but lean out. The weight of the body on the outside foot, upper foot leading, outside ski on its inside edge, inside ski on outside edge. The knees must necessarily be bent into the slope, and the body out from the waist up, the lower hand should be forward and down, so bringing the outside shoulder in advance. In this way the upper part of the body will be facing the hill. If the body faces down the hill, the tendency is to get the weight on the inside ski and so lose control.

SIDE-SLIPPING

Side-slipping is a useful manoeuvre when it is necessary to lose height in very narrow places, or when a turn is impossible, i.e., in woods or sometimes on the glaciers, where the country is steep. The skis are placed horizontally across the slope and flattened. The weight should be kept on the lower ski — unless this is done it is impossible to slide downwards. Guide your ski by weighting the point of the heel —

the points to slide forward and the heel to slide backwards. The foot must be kept flat on the ski to move sideways; if either ski is edged, it is impossible to carry out the manoeuvre. To stop sliding, edge more and more inwards until you have ceased moving, but do not edge too suddenly or the result will be a fall outwards, down the slope.

* * * * *

Chapter Four

THE SNOW PLOUGH TURN

THE beginner should first master the Snow Plough Turn; it is easier to learn than the pure Stem, and will prove of great assistance later. It is invaluable as a "brake" on paths, or places where no turn can be done.

Start on a slope of 10 to 15 degrees.

To turn Right when travelling straight down-hill.

Position 1.

Weight equally divided on balls of feet.

Knees well bent.

Upper part of body well forward.

Position 2.

Thrust left ski to angle of about 45 degrees on inside edge, keeping Right ski flat.

Ski points together.

Knees knocked.

Position 3.

Change weight entirely to left ski (*See Plate 5*).

Weight heel.

Ski well on its inside edge.

Retain this position until a quarter of the turn is completed.

Position 4.

Change of direction.

Throw the entire weight from left to right ski.
Weight equally divided on balls of feet.
Knees well bent.
Right shoulder forward.

Position 5

Weight heel.

Retain this position until a quarter of the turn is again completed.

Continue doing this exercise until you have completely mastered it.

It is also helpful, after a time, to place small red flags at intervals of twenty feet straight down the slope, and do the turns in and out of them. Then change the position of the flags and the distance between them, so making the turn sharper or wider as desired.

* * * * *

Chapter Five

STEM TURN

THE Stem Turn and the Snow Plough are the basis of all ski turns, and unless they are properly mastered at the beginning, the novice will never reach a high standard of efficiency in ski-running. Start the turn, if possible, on the same slope as has been used whilst practising the Snow Plough.

TURNING TO THE LEFT FROM A TRAVERSE

Position 1.

Weight on left ski.
Left shoulder and head forward.
Knees into the hill, body out.
Knees well bent.
Right foot leading 6 inches.

Position 2.

Flatten left ski and thrust right ski to an angle of about 35 degrees.
Right ski well on inside edge.
Left ski flat.
Points close together.
Left ski leading by about 1 to 2 inches.

Position 3.

Keep knees bent well forward.
Throw entire weight on to right ski.

Right shoulder and hips well over right ski.
Right knee inwards.

Position 4.

Push right heel further out.
Keep left ski flat, still slightly leading.
Shoulder still further forward over right ski.
Right ski well on inside edge.

Position 5.

Push forward left ski and draw inwards until it is parallel to the right ski and leading by 5 to 6 inches.
Left ski on its outside edge.
Left knee out.
Right knee in and behind left.

MOST FREQUENT FAULTS IN LEFT TURN

Position 1.

- a* Weight on right ski.
- b* Left shoulder and hand back.
- c* Knees straight.

Position 2.

- a* Failing to flatten left ski.
- b* Failing to edge right ski on inside.
- c* Edging left ski.
- d* Keeping points apart.
- e* Failing to lead with left ski.

Position 3.

- a* Failing to keep knees bent forward.
- b* Failing to change entire weight on the right ski.

- c Failing to twist shoulder and hips round and to right ski.

Position 4.

- a Failing to keep left ski flat and leading.

Position 5.

- a Keeping left ski on inside edge, so making it impossible to draw it inwards and forwards.
- b Failing to keep left knee out.

TURNING TO THE RIGHT FROM A TRAVERSE

Position 1.

- Weight on right ski.
- Right shoulder and hand forward.
- Knees into the hill and body out.
- Knees well bent.
- Left foot leading 6 inches.

Position 2. (See Plate 6).

- Flatten right ski and thrust left ski to an angle of about 35 degrees.
- Left ski well on inside edge.
- Right ski flat.
- Points close together.
- Right ski leading by about 1 to 2 inches.

Position 3.

- Keep knees well bent forward.
- Throw entire weight on to left ski.
- Left shoulder and hips well over left ski.
- Left knee inwards.

Position 4.

Push left heel further out.

Keep right ski flat, still slightly leading.

Left shoulder still further forward over left ski.

Left ski well on inside edge.

Position 5.

Push forward right ski and draw inwards until it is parallel with the left ski and leading 5 to 6 inches (*See Plate 7*).

Right ski on its outside edge.

Right knee out.

Left knee in and behind right.

MOST FREQUENT FAULTS IN RIGHT TURN

Position 1.

a Weight on left ski.

b Right shoulder and hand back.

c Knees straight.

Position 2.

a Failing to flatten right ski.

b Failing to edge left ski on inside.

c Edging right ski.

d Keeping points apart.

e Failing to lead with right ski.

Position 3.

a Failing to keep knees bent forward.

b Failing to change entire weight on to left ski.

c Failing to twist shoulder and hips round to the left ski.

Position 4.

- a* Failing to keep right ski flat and leading.

Position 5.

- a* Keeping right ski on inside edges, so making it impossible to draw it inwards and forwards.
b Failing to keep right knee out.

* * * * *

Chapter Six

STEM CHRISTIANIA

THIS is the most important and most universally used turn, and the basis of all high speed turns, including the parallel swing; it can be used under all conditions.

ON A TRAVERSE TURNING LEFT

Position 1.

Weight on left ski.

Knees in towards slope.

Body and hips away from slope.

Left hand down and forward.

Crouch low and at the same time flatten left ski.

Position 2.

Weight still on left ski.

Knees well forward.

Bring right ski into stemming position.

Position 3.

Rise on to balls of feet.

Take weight off heels.

Right hand and shoulder forward and down.

Left hand brought back to waist level.

Run left ski along right on its outside edge. (Leading six inches on hard snow, further forward on soft). (See Plate 8).

Position 4.

Drop again in crouch position.
Knees well forward.

Position 5.

Increase edging on left ski until side slipping is checked.

Rise into normal traversing position, i.e., skis together and knees bent, right knee behind left.

MOST FREQUENT FAULTS IN LEFT TURN

Position 1.

- a* Failing to lean out and flatten left ski.
- b* Failing to crouch.

Position 2.

- a* Weighting right ski when bringing to stemming position.
- b* Edging left ski inwards.

Position 3.

- a* Rising on to heels instead of balls of feet.
- b* Failing to bring right hand and shoulder forward and down; left shoulder and hand back.
- c* Edging left ski inwards, so that it cannot travel up to the right ski.
- d* Jerking, instead of swinging the body across to right ski.

Position 4.

- a* Failing to drop into crouch with knees well forward.

Position 5.

- a* Edging too quickly or not sufficiently.
- b* Not leading with left ski.
- c* Ski apart.
- d* Right knee not tucked under left.

ON A TRAVERSE TURNING RIGHT

Position 1.

Weight on right ski.
Knees in towards slope.
Body and hips away from slope.
Right hand down and forward.
Crouch low and at the same time flatten right ski.

Position 2.

Weight still on right ski.
Knees well forward.
Bring left ski into stemming position.

Position 3.

Rise on to balls of feet.
Take weight off heels.
Body and hips swing over left ski (*See Plate 9*).
Left-hand shoulder forward and down.
Run right ski along left on its outside edge.
(Leading six inches on hard snow, further forward on soft).
Right hand brought back to waist level.

Position 4.

Drop again into crouch position.
Knees well forward.

Position 5.

Increase edging of right ski, until side slipping is checked.

Rise into normal traversing position, skis together and knees bent, left knee behind right.

MOST FREQUENT FAULTS IN RIGHT TURN

Position 1.

a Failing to lean out and flatten right ski.

b Failing to crouch.

Position 2.

a Weighting left ski when bringing to stemming position.

b Edging right ski inwards.

Position 3.

a Rising on to heels instead of balls of feet.

b Failing to bring left hand and shoulder forward and down; right shoulder and hand back.

c Edging right ski inwards so that it cannot travel up to the left ski.

d Jerking, instead of swinging the body across to left ski.

Position 4.

a Failing to drop into crouch with knees well forward.

Position 5.

a Edging too quickly or not sufficiently.

b Not leading with right ski.

c Skis apart.

d Left knee not tucked under right.

It is essential to keep the inside ski of the turn flat until facing down hill, and to get the rise and fall of the body correctly timed. As you rise forward the weight should be entirely on the front of the skis, and the tails will then skid round without hindrance. Dropping into the crouch again prevents the ski from turning too far, thus controlling the length of the turn. For example: *A quick rise and fall and swing across constitutes a sharp angle turn, and a long-drawn-out rise and fall, a wider angle turn.*

The up-and-down motion should be done rhythmically and not with a jerk; it should also be exaggerated when the turn is being learned, as should the thrusting of the hand and arm forward, and the inside hand down, up and back. Otherwise the position of the upper part of the body will never be correct.

* * * * *



Plate 11. Jump-turn to the right

Plate 12. Parallel swing. Turning right. Position 3





Plate 13. Parallel swing. Turning right. Position 3

Plate 14. Parallel swing. Turning right. Position 2





Plate 15. Parallel swing. Turning left. Position 2

Plate 16. Parallel swing. Turning left. Start of Position 3





Plate 17. Reducing wind resistance

Plate 18. Example of keeping close to top flag



Chapter Seven

THE JUMP TURN

THIS is a turn which I cannot recommend for women, as it entails the use of abdominal muscles, and consequently is liable to do injury, owing to weight of the skis, although it is a useful turn in narrow places, or on breakable crust, but it cannot be done for long at a time, as the strain is too great.

ON THE TRAVERSE TURNING LEFT

Position 1.

Weight on left ski.

Crouch low.

Place left stick in the snow an inch or two ahead on the left ski, and slightly down hill. Hand and arm at waist level.

Position 2. (See Plate 10).

Straighten body and at the same time jump into the air, rising from the balls of the feet, and drawing knees up to chest. Swing body to the left; the heels should be raised first, points down.

Position 3.

Straighten knees to meet snow.

Left foot leading by about six inches.

Weight on right ski.

Let knees sink to crouch to absorb shock.

Skis together.

USUAL FAULTS IN LEFT TURN

Position 1.

- a* Failing to have weight on left ski.
- b* Placing stick in snow too near the body.
- c* Hand and arm level with shoulder, instead of at waist line.

Position 2.

- a* Jumping into the air without drawing knees up to chest.
- b* Failing to swing the body to the left.
- c* Raising ski points higher than the heels.

Position 3.

- a* Landing on inside ski instead of outside.
- b* Failing to land with inside ski forward.
- c* Failing to sink to crouch before shock.
- d* Failing to keep weight well forward when landing, causing a backward fall.

ON THE TRAVERSE TURNING RIGHT

Position 1.

Weight on right ski.

Crouch low.

Place right stick in the snow an inch or two ahead of the right ski, and slightly downhill.

Hand and arm at waist level.

Position 2.

Straighten body and at the same time jump into the air, rising from the balls of the feet, and drawing knees up to chest.

Swing body to the right; the heels should be raised first, points down (*See Plate 11*).

Position 3.

Straighten knees to meet snow.

Right foot leading by about six inches.

Weight on left ski.

Let knees sink to crouch to absorb shock.

Skis together.

USUAL FAULTS IN RIGHT TURN

Position 1.

a Failing to have weight on right ski.

b Placing stick in snow too near the body.

c Hand and arm level with shoulder instead of at waist line.

Position 2.

a Jumping into the air without drawing knees up to chest.

b Failing to swing the body to the right.

c Raising ski points higher than the heels.

Position 3.

a Landing on inside ski instead of outside.

b Failing to land with inside ski forward.

c Failing to sink to crouch before shock.

d Failing to keep weight well forward when landing, causing a back fall.

* * * * *

Chapter Eight

FIELD JUMPING

FIELD jumping, or what is known as the Gelände Sprung, is more amusing than useful, except where there are ditches or sunken paths. All the same it is a good thing to learn—not so much for its use as for the confidence which is gained. Start running straight down hill, choosing if possible a short up-rise, with a steeper slope at the end of the rise.

Position 1.

Feet together.

Crouch low.

Place sticks in the snow well forward and ahead of skis, at the top of the up-rise. Hands and arms at waist level. (Sticks should be held in normal running position, the thongs being a help for the jump. If thongs are not used, hold the sticks with the palms of the hands over the tops).

Position 2.

Straighten body and at the same time jump into the air, rising on the balls of the feet, and drawing knees up to chest.

Position 3.

Weight well forward.

Knees up to chest.

Toes down, heels up.

Position 4.

Straighten knees to meet snow.

One foot leading by about three inches.

Let knees sink to absorb shock, skis together.

Position 5.

Thrust forward the leading foot to about two feet ahead to counteract the tendency to fall forward on the shock of landing.

Position 6.

Assume normal running position.

The above description affects all types of field jumping and not merely those which are done with the aid of a bump.

USUAL FAULTS IN FIELD JUMPING

Position 1.

a Failing to keep feet together.

b Failing to crouch low.

c Placing sticks too near the feet.

d Hands and arms at shoulder level instead of waist level.

Position 2.

a Jumping straight up into the air instead of forward.

b Failing to draw knees up to chest.

Position 3.

a Failing to keep weight forward.

b Heels down and toes up, instead of vice versa.

Position 4.

- a* Failing to keep skis together upon landing.
- b* Having weight back.

Position 5.

- a* Failing to thrust the ski well forward.

* * * * *

Chapter Nine

THE PARALLEL SWING

SO CALLED owing to the absence of the preliminary Stem. It is really the Stem Christiania at high speed. If used at slower speed, the absence of Stem must be counteracted by lifting the tail of the skis clean off the ground. Consequently, the weight when executing this turn must be very far forward, and the rise and fall of the body must be accurately timed.

It is a delightful turn in powder snow; as it gives one the impression of floating, but very difficult on breaking crust and rutted snow, where the Stem Christiania comes into its own again. One might say, perhaps, that it is essentially for good conditions. For racing it is the fastest turn.

It will be found easier when practised continuously rather than each turn separately, and must be done practically straight down the slope, and not from a traverse. If attempted from the latter, the speed must be greater than in the Stem Christiania.

TURNING FROM RIGHT TRAVERSE TO LEFT

Position 1.

Skis very close together.

Left ski leading slightly on inside edge.

Right ski outside edge.

Knees bent in semi-crouch.

Weight well forward.
Left shoulder and hand forward.
Right shoulder back.
Right hand at waist level and back.
Slightly more weight on left ski than right.
Knees over to the right.

Position 2.

Rise forward on to balls of feet.

NOTE. At slow speed rise so sharply as to lift tails of skis off the ground.

Swing body and seat over to right ski (*See Plate 15*).

Both skis flat.

More weight on right ski than left.

Knees straight over ski.

Position 3.

Drop into semi-crouch.

Right shoulder and hand forward.

Left shoulder and hand back.

Left ski outside edge.

Right ski inside edge.

Knees over to the left.

Left ski forward (*See Plate 16*).

MOST FREQUENT FAULTS IN RIGHT TRAVERSE TO LEFT

Position 1.

a Skis apart.

b Weight back.

c Knees not forward.

Position 2.

- a* Failing to rise from the crouch well forward.
- b* Weighting heels.
- c* Edging skis.

Position 3.

- a* Failing to drop back into semi-crouch.
- b* Failing to bring right hand and shoulder forward.
- c* Failing to have knees over to the left.
- d* Left ski not forward.

NOTE. The greatest fault of all is failing to get the rhythmic rise and fall, and the forward thrust of the body. If these are not done, the turn will never be mastered.

Start turning to right immediately the turn to the left is completed.

TURNING FROM LEFT TRAVERSE TO RIGHT

Position 1.

- Push right ski 4 inches forward of left.
- Skis very close together.
- Right ski inside edge.
- Left ski outside edge.
- Knees bent in semi-crouch.
- Weight well forward.
- Right shoulder and hand forward.
- Left shoulder back.
- Left hand at waist level and back
- Slightly more weight on right ski than left.
- Knees over to the left.

Position 2.

Rise forward on to balls of feet.

NOTE. At slow speeds rise so sharply as to lift tails of skis off the ground.

Swing body and seat over to left ski.

Both skis flat.

More weight on left ski than right.

Knees straight over skis (*See Plate 14*).

Position 3.

Drop into semi-crouch.

Left shoulder and hand forward.

Right shoulder and hand back.

Right ski outside edge.

Left ski inside edge.

Knees over to the right.

Right ski forward (*See Plates 12 and 13*).

MOST FREQUENT FAULTS IN RIGHT TRAVERSE TO LEFT

Position 1.

a Skis apart.

b Weight back.

c Knees not forward.

Position 2.

a Failing to rise from the crouch well forward.

b Weighting heels.

c Edging skis.

Position 3.

a Failing to drop back into semi-crouch.

b Failing to bring left hand and shoulder forward.

- c* Failing to have knees over to the right.
- d* Right ski not forward.

NOTE. The greatest fault of all is failing to get the rhythmic rise and fall, and the forward thrust of the body. If these are not done, the turn will never be mastered.

* * * * *

Chapter Ten

THE TELEMAR TURN

THIS Turn is steered as opposed to the Swing of the Stem Christiania, and is useful in deep heavy snow, on rather flat slopes, and is also helpful on breakable crust where the Stem Christiania is difficult for the medium runner. Personally I do not recommend this turn, as it entails entirely altering the previous style of running.

It is advisable not to attempt to learn it until the novice has attained complete mastery of the Stem Turn, and a good working knowledge of the Stem Christiania.

Position 1.

Weight on left ski.

Thrust right ski forward, until the toe of the left ski is level with the point of the right boot.

Right shoulder forward.

Upper part of body facing down slope.

Right knee bent well forward

Position 2.

Push out heel of right ski.

Edge right ski inwards.

Keep point of left ski practically touching right boot.

Position 3.

Lean well forward and downhill.

Keep left ski flat.
Weight on right ski.
Knee inwards.

Position 4.

Push out right heel further.
Right knee further forwards and inwards, keeping left knee slightly bent.

Position 5.

Let left heel swing round to meet right ski, until it is parallel with it.
Right ski still leading.
Weight on right ski.

Position 6.

Keep this position until Turn is assured, then left ski comes up to right and push it 6 inches ahead into normal traversing position.

MOST FREQUENT FAULTS IN LEFT TURN

Position 1.

- a* Failing to thrust right ski sufficiently forward.
- b* Failing to bend right knee.

Position 2.

- a* Failing to edge right ski inwards.
- b* Allowing point of left ski to spread from the right.

Position 3.

- a* Failing to lean sufficiently forward downhill.
- b* Not weighting right ski sufficiently.
- c* Not forcing right knee inwards.

Position 4.

- a* Failing to thrust right knee further forward and not bending left knee sufficiently.

Position 5.

- a* Keeping left ski on its edge so that heel cannot swing round to run parallel with right ski.

Position 6.

- a* Failing to keep together during the turn.
- b* Bringing up left ski to right before the turn is completely finished.
- c* Failing to return to normal traversing position.

FROM THE TRAVERSE, TURNING RIGHT

Position 1.

Weight on right ski.

Thrust left ski forward, until the toe of the right ski is level with the point of the left boot.

Left shoulder forward.

Upper part of body facing down slope.

Left knee bent well forward.

Position 2.

Push out heel of left ski.

Edge left ski inwards.

Keep point of right ski practically touching left boot.

Position 3.

Lean well forward and downhill.

Keep right ski flat.

Weight on left ski.

Knee inwards.

Position 4.

Push out left heel further.

Left knee further forwards and inwards, keeping right knee slightly bent.

Position 5.

Let right heel swing round to meet left ski, till it is parallel with it.

Left ski still leading.

Weight on left ski.

Position 6.

Keep this position until Turn is assured, then let right ski come up to left and push it 6 inches ahead into normal traversing position.

MOST FREQUENT FAULTS IN RIGHT TURN

Position 1.

a Failing to thrust left ski sufficiently forward.

b Failing to bend left knee.

Position 2.

a Failing to edge left ski inwards.

b Allowing point of right ski to spread from the left.

Position 3.

a Failing to lean sufficiently forward downhill.

b Not weighting left ski sufficiently.

c Not forcing left knee inwards.

Position 4.

a Failing to thrust left knee further forward and not bending right knee sufficiently.

Position 5.

- a* Keeping right ski on its edge so that heel cannot swing round to run parallel with left ski.

Position 6.

- a* Failing to keep feet together during the turn.
- b* Bringing up right ski to left before the turn is completely finished.
- c* Failing to return to normal traversing position.

* * * * *



Plate 19. The safety device in the rest position

Plate 20. The heel raised as in walking, roughly $1\frac{1}{2}$ in. from the ski



Plate 21. The device beginning to operate.
The strap is pulling the spring off the ski



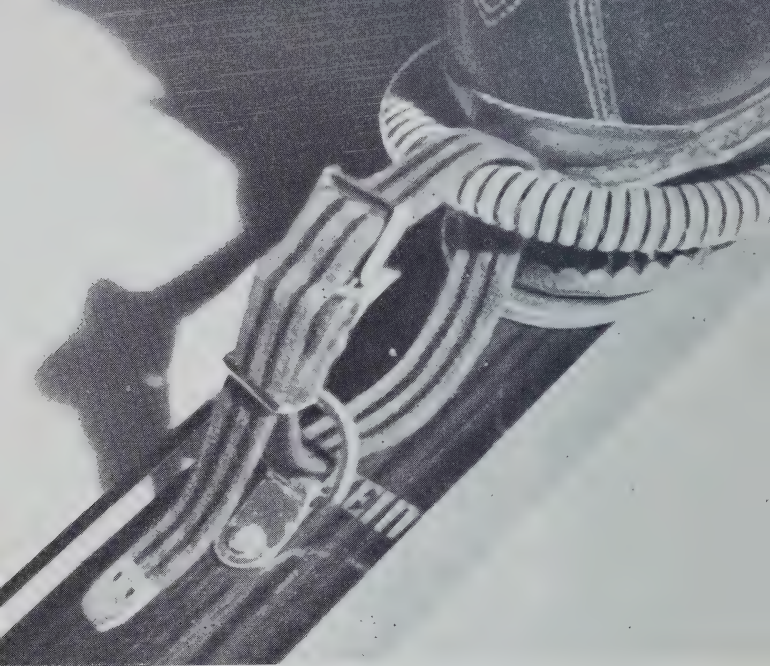


Plate 22. The “ Club ” safety device

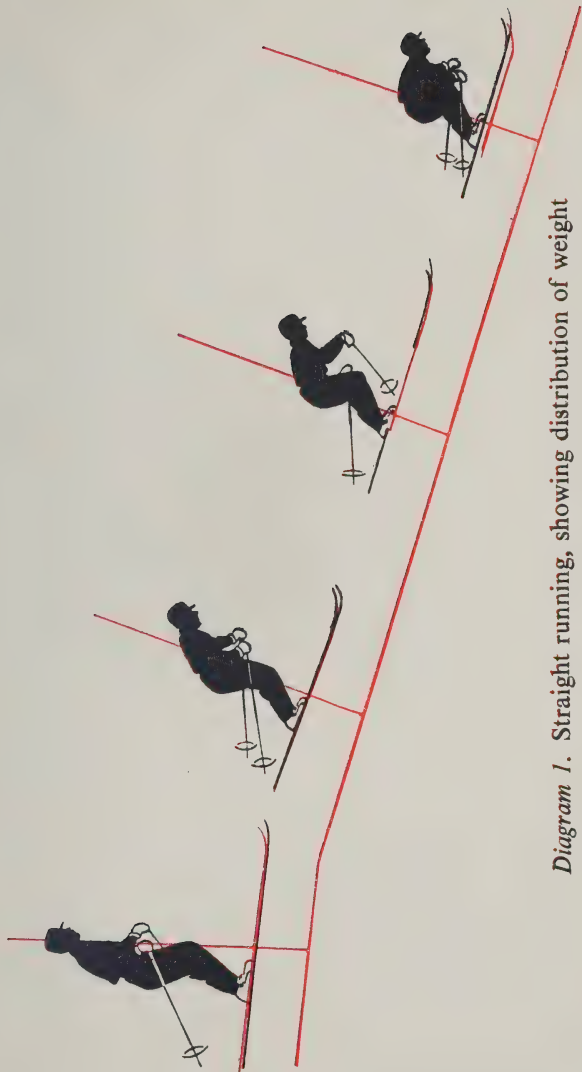


Diagram 1. Straight running, showing distribution of weight

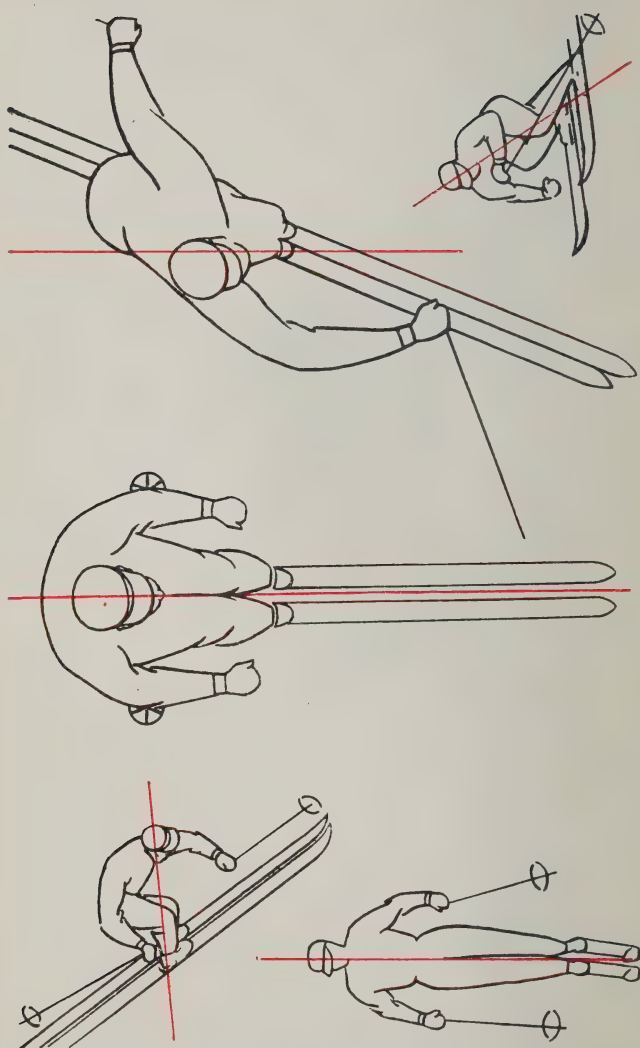


Diagram II. Keep head still and always over centre of ski

Chapter Eleven

HINTS FOR THE RACER

Downhill

KEEP yourself warm before the start. Keep moving and walk uphill to keep your muscles flexible.

Never hold your breath. As when swimming, to get the rhythm, it is essential to breathe evenly. The best way to achieve this is to concentrate on breathing out.

Reduce wind resistance on easy slopes either by squatting on your heels or by leaning well forward on the balls of the feet with the arms behind the back (*See Plate 17*). Squatting is faster but much more tiring for the legs and less secure over bumps.

Keep on the ground as much as possible, it is quicker to absorb bumps than to jump over them. This does not apply to taking shorts cuts over steep drops.

For sudden control on steep slopes at speed, a pure stem or snow-plough is quicker than a check turn.

In most cases, except on a flat path, punting is slower than a crouch and is apt to upset the balance.

Etiquette

Always give way when being overtaken, even on a path.

SLALOM RACING

ALWAYS do your turn before reaching the flags and ski through the flags. This is faster and avoids the possibility of knocking the flags over.

Keep as close to the top flag as possible, thus giving you more room to manoeuvre for the next pair of flags (*See Plate 18*).

Always keep your toe-points together, otherwise you are apt to catch the leading foot on one of the flags.

In a Slalom it is most essential to swing and not do jerk turns. The snake-like movement of swinging is far faster and much less tiring.

The weight should be far more forward than in straight running and the pressure should be felt on the balls of the feet.

The head must be kept completely still and in line with the centre of your feet as this is the heaviest part of your body and will upset your balance. (*See all photographs*).

* * * * *

Appendix I

Appendix I

"DON'T'S" FOR BEGINNERS AND OTHERS



Don't attempt Tours until you have attained some measure of control. Constant falls are both tiring and mortifying.

* * *

Don't borrow other people's wax; buy your own.

* * *



Don't ignore the advice and warning of local guides about weather and snow conditions. They change very rapidly in the mountains. Where yesterday was perfectly safe, to-day may be liable to avalanche

* * *

Don't wear damp socks or you will soon get very cold feet.

* * *



Don't overdo it during the first few days. You are at much higher altitudes than you are in England, and the violent exercise puts a great strain on the heart.

Don't start out on an excursion without telling someone where you are going in case of accident.

* * *

Don't show off.

* * *



Don't describe the falls you have taken during the day. All beginners fall frequently and usually for the same reasons, so it is very dull to the listener.

* * *

Don't dash off, leaving a slower member of your party to fend for himself. It is the height of selfishness, besides exposing him or her to considerable danger.

* * *

Don't attach yourself to parties who are very much better than yourself. Don't arrive late at your classes; the instructor has to repeat himself and so delay the rest of the class.



* * *

Don't use bad language when you fall. It is of no help and is not amusing to the listener.



Don't be self-conscious about falling. Everyone has to fall endless times before becoming in anyway proficient.

* * *

Don't run by yourself. If you meet with an accident or get into any kind of difficulty, you risk long exposure and cause endless worry and inconvenience to your friends.

* * *



Don't wear insufficient clothes, especially if you are a woman, or the misguided male will feel he has to lend his coat or gloves, and consequently get thoroughly chilled himself.

* * *

Don't choose a race-course where practise is going on for your run, as although etiquette demands the slower moving body should have the right of way, it puts too great a strain on the self-control of the practising racer, besides being extremely dangerous, both for him and yourself.

* * * * *

Appendix II

Appendix II

SPECIAL PRECAUTIONS AND WARNINGS

AVALANCHES

THOUGH avalanche-craft cannot be summarised in a few lines, there are none the less a few simple rules, the careful observance of which would have more than halved the fatal avalanche accidents of the past.

The novice is urged not merely to glance through, but to *memorise*, the warnings set forth below.

For the further study of snow-craft and avalanche-craft the following works are recommended:—*Alpine Ski-ing at all Heights and Seasons*, by Arnold Lunn (Methuen, 5s.), its French translation *Le Ski en hiver, au printemps, sur les glaciers* (Dardel, Chambéry), *Alpinisme Hivernal*, by Marcel Kurz, and *Snow Structure and Ski Fields*, by G. Seligman (MacMillan, 25s.)

I. GENERAL

Every skier should seek to acquire a sound knowledge (*a*) of Alpine conditions (*b*) of how to prevent accidents (*c*) of how to cope with them when they occur and (*d*) of the common courtesies of skiing. Mountains, particularly in winter, must be treated with respect—even on those narrow strips where the snow has been beaten into a track.

Inexperienced skiers who have never met a blinding snow-storm are apt to treat the "local standard run" as if it were no more dangerous than the pavement of the Strand; admittedly they have—in ordinary decent weather—their similarities, but come a sudden storm on the former and they are poles apart.

2. PRINCIPAL SAFETY RULES

(1) *Never leave a man behind*

On the descent, whether on a track or on tour, arrange gathering places where the party can re-assemble. Do not dash off downhill on your own or take a line different to that taken by the others; you may break a leg, get caught in an avalanche or, if on the glaciers, fall into a crevasse. The longer it is before your absence is noticed, the less hope you will have of getting out alive. Where a party consists of more than three or four persons, one specified member should be responsible for checking that all are accounted for at each halting place. Fatalities have occurred through failure to account for all members of a party in the course of a run.

(2) *Always stand by to help another party in trouble*

If you come across an accident involving another party, assume you can be of use and remain close at hand in case there is any call for your services; satisfy yourself that all necessary rescue or

first-aid measures have been taken before continuing your run.

(3) *If likely to be benighted, dig a shelter quick*

If benighted owing to accident or to bad weather, shelter must be found. A shelter dug into the snow and roofed over with ski and sticks covered with snow will provide comparative warmth and almost complete protection against exposure to wind and cold. Many lives have been saved by this means.

(4) *Do not run fast over blind edges*

If you do you may run into someone traversing or stationary on the slope below. Conversely, do not stand about unnecessarily below a blind edge where you cannot be seen from above.

(5) *Recognise the danger of over-tight bindings*

Slacken off your bindings if running in heavy or deep snow; the risk of a leg injury or fracture is much greater when your foot is locked into the toe-iron. In any case the novice should not run with bindings too tight, whether on soft, hard or any other kind of snow; this has been a frequent cause of accidents.

(6) *Carry a repair outfit*

A broken ski means the end of the run for you and for some at least of your party, as they cannot leave you behind; even on a popular track run, if a ski is broken late in the day far from home or in

bad weather it may mean a night out. So buy a small, handy and efficient repair outfit and carry it with you.

(7) *Do not go on even a short tour by yourself*

At least don't do so your first few seasons.

3. ACCIDENTS AND SEARCH PARTIES

(1) Ski-runners who start out for a run off the beaten track should always leave with the *concierge* of their hotel, or with some other person, a brief note giving their intended route and probable hour of return. They should report their safe return to the person in question.

(2) Ski-runners who have not returned within three hours of their probable time of return, or within an hour after sunset, are liable for any expenses incurred in sending out a search party.

4. ALPINE DISTRESS SIGNALS AND THE ANSWER

(1) By day. The waving of anything (a flag, or stick with an article of clothing attached) six times in a minute, repeated after an interval of one minute without signals.

(2) By night. A light flashed six times in a minute, repeated after an interval of one minute without signals.

(3) By sound. Six sharp calls, or whistles, in the

minute, repeated after an interval of one minute without signals.

The Answering Call

(4) Anything waved, a light flashed, a sharp call, or whistle three times in a minute, repeated after an interval of one minute without signals.

(5) If a ski-runner does not remember the exact signal, any regular signal repeated a definite number of times in a minute with a minute's interval, should prove sufficient. Similarly, if you hear a signal repeated at short regular intervals, you should always suspect a call for help, reply to it and hasten to render aid.

5. AVALANCHES

(1) *New-Snow Avalanches*

Ski-runners are warned of the danger of ski-ing on newly fallen snow. At freezing point, or a few degrees below, this is liable to avalanche on slopes above twenty-two degrees (exceptionally, even less) for at least three days after a fall—and, at lower temperatures, for longer.

(2) *Wet-Snow Avalanches*

During *föhn*, rain or other warm weather, even slopes of such moderate gradient as fifteen-twenty degrees are liable to wet-snow avalanches. If the snow begins to stick, the approach of *föhn* or thaw conditions should be suspected. The temperature

may rise several degrees in half-an-hour. The first hint of such a rise should therefore be regarded as a serious warning. During thaws, avalanches occur more in the afternoon than in the morning.

(3) *Wind Avalanches*

After snowfalls accompanied by wind all lee slopes should be regarded with suspicion, as thick accumulations of soft, powdery snow form there, and are most liable to avalanche.

All slopes exposed to and hardened by wind (as opposed to sun) should be suspected for wind slab, of which the hard surface conveys a false impression of security. "Wind slab" avalanches have been responsible for many fatal accidents.

(4) *Miscellaneous Points about Avalanches*

A slope anywhere below a cornice should be treated with the greatest caution. The very form of a cornice makes it liable to start a serious avalanche.

Avalanches may start on a steep gradient and run out over quite moderate slopes or even flat ground.

The strictest attention should be paid to local avalanche warnings, and local advice should always be obtained before embarking on an unknown run when avalanche conditions prevail.

A start should on no account be made for a hut or for a high mountain tour unless the weather is settled and the barometer has remained steady for



Diagram III. Parallel swing, showing change of weight and shoulder movement

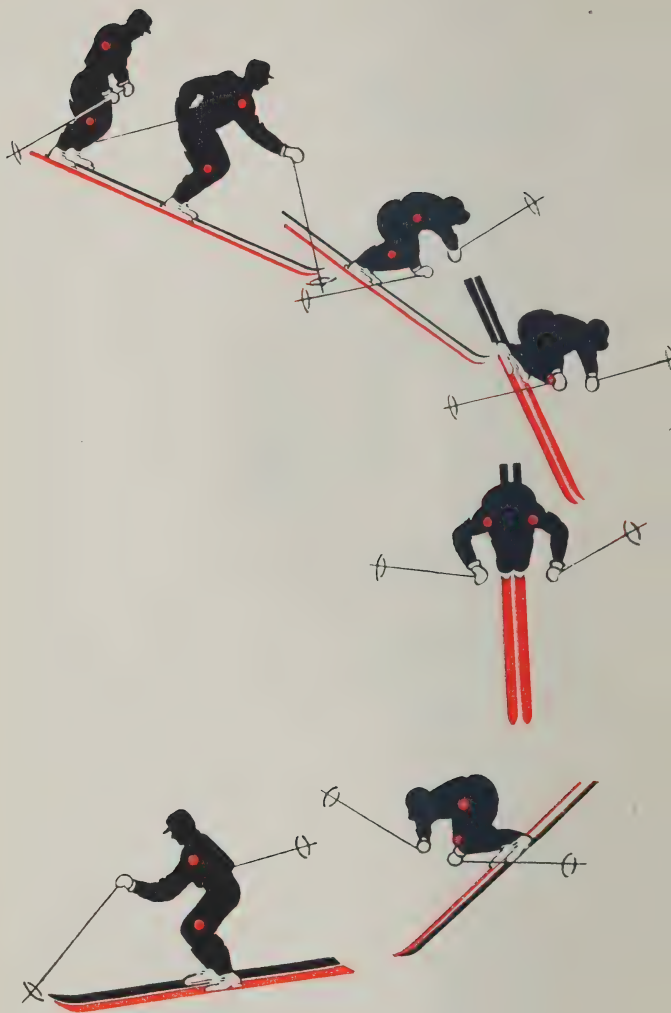


Diagram IV. Parallel swing, showing change of weight on steeper slopes. Note all the weight on front of ski in centre of the turn

several days. An official weather-report and forecast should be obtained.

(5) *Avalanche Precautions*

A dangerous slope should not be traversed horizontally. If it is impossible to turn back, it is best to go straight down it wearing seal-skins, or without ski. If a traverse is unavoidable, the slope should be crossed high up, with loosened bindings, or, better still, with ski removed. The chance of surviving an avalanche is much greater if ski are not being worn.

On the traverse of a suspected slope there should be an interval of 100 yards, or on a long traverse 200 or even 300 yards, between each member of a party.

6. SKI-ING ETIQUETTE

The increased devotion of skiers to "track" running makes observance of an agreed code of ski-ing etiquette more desirable than ever. This statement must not be taken to detract from the vital importance of careful, courteous and considerate behaviour on tour. It is to be hoped that all British skiers will pay particular attention to the points enumerated below:—

(1) *The Common Courtesies*

Remember always you are in a foreign country and go on the assumption that the reputation of your

country for courtesy and sportsmanlike behaviour is entirely in your hands.

If you use a Club or any other hut remember you are the guest of that Club. Leave the hut as tidy as you found it. Do not omit to make the payments due.

If any members of the local Club are practising on a Slalom course or jumping, ask their permission before running down the course or going over the jump. Do not intrude on any Ski School other than your own.

If you use a jump built and maintained by the local Club be particularly careful to fill up any holes made by your falls and also to stamp the jump after use and leave it in at least as good condition as you found it.

Do not interfere with rescue or first-aid apparatus.

Do not leave litter behind you; and do not bury it in the snow, it will only return in the spring.

(2) General Rules regarding Right of Way.

SKI-RUNNING

In ski-running, the slower-moving party has the right-of-way. If two ski-runners are traversing a slope from opposite directions, they must, on meeting, pass to the right, (the Continental rule of the road). A ski-runner overtaking another travelling in the same direction as himself, whether on a traverse or not, must pass on the left if the available ground forces him to pass at all close.

SKI-RACING

In ski-racing, other than No-Fall racing, the faster-moving party has the right-of-way.

(3) *Practice Slopes*

Remember that these are principally the preserves of beginners and that, consequently the good skier should run on them with extra care and consideration for others.

Keep well clear of those areas where Ski Schools and Instructors are working.

If there is a practice jump, keep clear—particularly of the landing ground and out-run. The jumper is entitled to practise without obstruction and, whereas you may have all the rest of the slopes to ski on, his area of operations is confined to the jump.

(4) *The Beaten Track.*

The track runner, like the tourer, has (though he may be confined to what is virtually a prepared track) no right to expect other people to get out of his way; he who collides with a slower or a stationary ski-runner is alone to blame.

Give the slower runner a wide berth. If he starts to turn and you collide with him, it is no excuse to explain that you did not expect him to turn.

If you want to overtake, allow sufficient elbow-room; nothing is more trying to a slow runner than to have a fast runner flash past him without warning and with too little room to spare.

When stopping and waiting at popular or obvious halting places stand clear of the track.

Before you start off at the beginning of the run or after an intermediate stop, make sure there is no one coming behind you.

(5) *On Tour—Ascending*

Always follow in the track of the guide or leader of the party, he probably has a good reason for taking the line he has chosen. By noting the line he takes and the places he chooses for turning, you should soon learn the elements of leading a climb yourself.

Always keep a distance of three to five yards behind the person in front and be meticulous to avoid treading on the heels of his ski as you climb.

Step out of the track on the upper side when you wish to rest, change clothing, admire the scenery or take photographs.

If you have stepped out of the track, do not cut in on the party when starting again and so make others stop unnecessarily. Tempers are apt to be touchy when climbing; wait for a convenient space.

If you find the climbing pace too fast for you, do not hold up others whom it may suit; stand aside out of the track to let them come by if they wish to. Conversely, if you want to overtake the man in front do so without baulking him.

The leader should never lead his party across the track of another party so as to baulk them.

(6) *On Tour—Descending.*

Do not tack on uninvited to another party, par-

ticularly if you are not up to their standard of skiing. You are unlikely to be welcomed if they have to wait for you or come to your assistance as they might be obliged to do.

If you want to run fast you should either start first or else make certain that the rest have reached the bottom of the slope before you start off.

If you are leading, remember to wait at intervals for the slower members to catch up and rest if they wish to. The leader should see that the pace he sets suits the slower members of the party.

Remember at all times, when on tour, that you are part of a team, and must pull your full weight in whatever conduces to the safety and enjoyment of the party as a whole.

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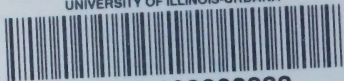
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